

**Notice of Allowability**

Application No.

10/666,208

Examiner

Victor J. Taylor

Applicant(s)

THOMANN ET AL.

Art Unit

2863

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to SEPTEMBER 17, 2004.
2. ☒ The allowed claim(s) is/are 23-26.
3. ☒ The drawings filed on 18 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 8
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings were received on September 18, 2003. These drawings are approved.

### **Prior Art**

2. The prior art made of record and not relied upon is considered pertinent to applicant;

I. Art A of Moeckel US 4,802,146 in class 367/052 is cited for the method for move out correction and stacking velocity estimation of offset VSP data with steps to provide a move-out correction process of VSP data using the receiver in the borehole of figure 1 thereby providing a method for determining a parameter of interest in the subsurface region about the borehole and discloses obtaining seismic survey information using the receiver 26 recording the information about the reflected event about the subsurface region in figure 2 and further teaches a plurality of interpreted horizons in the stacked data disclosed in the computations for the hyperbolic stacking used in the NMO and processing of CDP seismic Data using the equations and processes in lines 15-60 of column 4.

II. Art B of Robbins et al., US 5,678,643 in class 175/045 is cited for the acoustic logging while drilling borehole tool with the BHA used to detect bed boundaries and provide a look-ahead drilling feature for determining parameters of interest in the underground geology see the migration of hydrocarbons and the desired drilling path in figure 13 and using swept and short acoustic pulse detects

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a parameter of interest about the borehole in lines 30 of column 6 in combination with the complete document.

***Allowable Subject Matter***

3. Claims 23-26 are allowed. The applicant cancelled claims 1-22.
4. The following is an examiner's statement of reasons for allowance:

The prior art is not seen to teach the required data processing algorithm of independent claim 23 for the particular combination of data types and operations for analyzing the seismic survey data where the seismic data is calibrated to the specific parameters of interest used to develop the model to obtain results of the parameter at any location within the survey and is allowable over the cited art of record.

The method in claim 23 with steps for determining a parameter of interest of a subsurface region of earth formations around a borehole with the method steps and limitations for "obtaining seismic survey information about the subsurface region" ... [and] with the steps of "identifying a plurality of interpreted seismic horizons of interest from the obtained survey information" ... [and] with the steps of "obtaining the estimated seismic velocities corresponding to at least one interval between at least one pair of the said plurality of seismic horizons wherein the obtained seismic velocities are selected from the group" of the ["S-wave velocity data generated from the normal move-out (NMO) velocity analysis" or the group of "the P-wave velocity data from VSP look-ahead inversion" or from the S-wave velocity data from the VSP look-ahead inversion"] ... and/or in combination with the steps for "calibrating the estimated seismic velocities to the

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parameter of interest” and with the steps of “using the results of the calibration and the seismic velocities to obtain the parameter of interest at any location within the seismic survey “ is not found in the cited art of record.

The prior Art A of Moeckel teaches the method for move out correction and stacking velocity estimation of offset VSP data with steps to provide a move-out correction process of VSP data and teaches using the seismic receiver in the borehole of figure 1 and provides a method to determine a parameter of interest in the subsurface region about the borehole and teaches steps for obtaining the seismic survey information using the receiver 26 and teaches steps for recording the information about the reflected event in the subsurface region in figure 2 and further teaches a plurality of interpreted horizons using the stacked data disclosed in the computations for the hyperbolic stacking used in the NMO and the processing of CDP seismic Data and teaches using the equations and processes in lines 15-60 of column 4.

The prior Art B of Robbins et al., teaches the acoustic logging while drilling borehole tool with the BHA used to detect the bed boundaries and provide a look-ahead drilling feature for determining the parameters of interest in the underground geology. He further teaches the migration of hydrocarbons along the desired drilling path in figure 13 and teaches using swept and short acoustic pulse to detect a parameter of interest about the borehole in lines 30 column 6

Therefore, the prior art Moeckel and The prior art of Robbins et al., in combination or alone does not teach the present limitation of the claimed combination limitation.

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It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

Claims 24-26 dependent on the allowed independent claim 23 are allowed at least for the reasons cited above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 571-272-2281. The examiner can normally be reached on 8:00 to 5:30 PM.


6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571-272-2863. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center at 866-217-9197 (toll-free).

VJT

  
20 August 2004.

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800